



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,736	03/22/2004	Raschid J. Bezama	FIS920040003US1	2735
23550	7590	10/04/2005	EXAMINER	
HOFFMAN WARNICK & D'ALESSANDRO, LLC			BOECKMANN, JASON J	
75 STATE STREET			ART UNIT	
14TH FL			PAPER NUMBER	
ALBANY, NY 12207			3752	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/708,736	BEZAMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason J. Boeckmann	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Drawings*

The drawings are objected to because figure 6 and figure 4 appear to show a wall defining the fluid passage to the surface, but figure 3 and figure 5 do not. In addition, it is unclear, in figure 6, how the fluid flows into the first and second vortices shown. Please explain and or correct. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear from the specification and the drawings how the cleaner operates with the vacuum volume being between 90 and 100 percent of the fluid delivery volume. If the vacuum volume is less than the fluid delivery volume, some of the fluid and the particles being removed from the surface must escape from the cleaner into the atmosphere, or alternatively, there would be a pressure buildup in or around the nozzle or the chamber area. Having the particles escape from the cleaner would defeat the purpose of the claimed invention. According to the drawings, these particles and excess fluid that are not being sucked into the vacuum must escape through opening 132. Yet in figure 5,  $Q_{room}$  is shown to be flowing into the cleaner through opening 132, signifying a greater vacuum volume than fluid delivery volume.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-12 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 9, line 9, the term "inner diameter of the fluid nozzle" is not clear, as no reference points are set forth. Also, the term, "a distance", does not refer to any specific dimensions on the apparatus. Therefore it is unclear as to which distance is being claimed. In addition, the limitation, "inner diameter," in line 3 of claim 9 has insufficient antecedent basis. In regards to claim 10, the term, "vacuum entry," is not clear, as no reference points are set forth. In addition, claim 10, claims "a lateral distance", not any specific dimensions on the apparatus. Therefore it is unclear as to what lateral distance is being claimed. In regards to claim 11, a partition defines the central cavity as stated in claim 1. Therefore, a central cavity consists of only one partition, which is inconsistent with the claim language. In claim 12, the term "a vertical edge" does not refer to any specific vertical edge and therefore it is unclear as to which vertical edge is being referenced. In addition, the limitation, "inner diameter," in line 3 of the claim has insufficient antecedent basis. In regards to claim 19, in the last step, the term "removing at least part of the second vortex," is not clear as to what is being removed, the particles suspended in the fluid or actually part of the vortex.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3752

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5,6, 9-12 (as well as understood), 14-17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lindström et al (5,800,679).

Lindström et al shows a cleaner (10) for removing particles from a surface (W) by propelling a fluid onto the surface. The cleaner has at least one partition (17) adjacent to the nozzle (20). Each partition defining a central cavity (25) configured to define the fluid into a first vortex and a side cavity (16) configured to define the fluid into a second vortex. The fluid nozzle (20) is adjustable (column 4, lines 62-5) and can be adjusted to propel the fluid substantially perpendicular onto the surface (w). The cleaner also includes a vacuum (not shown) to remove at least part of the escaping fluid (column 4, lines 54-6). In regards to claims 5 and 6, each partition (17) of the cleaner (10) is separated from the surface (W) by a partition distance and the nozzle (20) is distanced from the surface by a nozzle standoff distance, and the partition distance is less than a distance from the centerline of the fluid nozzle (20) to the partition (17) (figure 1).

Regarding claims 9 and 10, as well as understood, as depicted in figure 1, the distance between the nozzle (20) and the partition (17) is greater than five times than inner diameter of the nozzle (20) as well as the ratio of the lateral distance between the partition (17) and the vacuum entry (15) to the partition distance is greater than 10.

Regarding claims 11 and 12, as well as understood, as depicted in figure 1, the central cavity (25) forms an angle with the horizontal between 0 and 65 degrees, at or around the pointer labeled 17. The angle that the side cavity (16) forms with the horizontal

Art Unit: 3752

appears to be between 20 and 90 degrees due to the nature of its shape, and the angle between the central cavity (25) and the vertical edge of the fluid nozzle (20) appears to be about 90 degrees. With respect to claim 14 and 15, the cleaner (10) is placed above the surface (W) and each cavity (14) extends in a planar fashion (figure 1). In regards to claims 16 and 17, Lindström et al's invention includes a means for delivering a fluid under pressure to an area on the surface (11), a means for forming fluid departing the surface into at least one first vortex adjacent the area and in contact with the surface (17), and at least one second vortex adjacent to the first vortex (25) and means for evacuating particles by removing art of the second vortex (16), the second vortex being counter-rotating to the first vortex. Lastly, as well as understood, the method of claim 19 is performed with the structure of Lindström et al's invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:



Art Unit: 3752

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4, 7, 8, 13, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindström et al (5,800, 679).

In regards to claim 4, as well as understood, Lindström et al discloses all aspects of the applicant's invention as set forth in claim 3, but does not explicitly disclose that the cleaner has a vacuum volume greater than 90% of the fluid nozzle delivery volume. However, Lindström et al does disclose that the cleaner can have a fluid delivery rate of 2 kPa to about 50 kPa and a vacuum rate of about 0.5 kPa to about 3 kPa (column 4, lines 39-40, 54-6). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to choose to operate Lindström et al's cleaner at a fluid delivery rate of 2 kPa and a vacuum delivery rate of 2kPa as suggested by Lindström et al.

Regarding claim 7, Lindström et al discloses all aspects of the applicant's invention as set forth in claims 1 and 5, but does not explicitly disclose that the standoff distance is no less than 1.2 times the partition distance and no greater than twice the partition distance. The applicant has not stated that this structure solves a previously stated problem. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to distance the cleaner (10), of Lindström et al, away from



Art Unit: 3752

the surface (W) so that the standoff distance is within the claimed range, to improve the cleaning force.

Regarding claim 8, Lindström et al discloses all aspects of the applicant's invention as set forth in claims 1 and 5, but does not explicitly disclose that the Reynolds number based on a fluid velocity as a reference and the partition distance as a reference distance is no less than 7,500 and no greater than 20,000. Due to the Reynolds number being a function of velocity, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to increase or decrease the velocity of the fluid so that the Reynolds number falls within the claimed range, to improve the cleaning force that the liquid applies to the surface.

Regarding claims 13, 18 and 20, Lindström et al discloses all aspects of the applicant's invention as set forth in claims 1, 16 and 19, including a second vortex having a larger diameter than the first vortex, but does not disclose that the second vortex has less energy than the first vortex. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention that the second vortex of Lindström et al has less energy than the first because it is larger in diameter as well as positioned further away from the pressurized air source.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Keller (6,449,799) shows a vacuum with a pressurized air source.

Art Unit: 3752


Wakao et al (US2005/0044653) and Uzawa (5,457,847) et al both show a cleaning apparatuses including both vacuum sections and pressurized air nozzles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason J. Boeckmann whose telephone number is (571) 272-2708. The examiner can normally be reached on 7:30 - 5:00 m-f, first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Scherbel can be reached on (571) 272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JJB JJB 9-28-05

  
David A. Scherbel  
Supervisory Patent Examiner  
Group 3700